

# TREATMENT OF PHTHISIS

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DR. BURNEY YEO.

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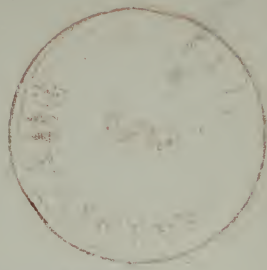
WILSON FOX.

RECENT RESEARCHES

IN THE

TREATMENT OF PHTHISIS.





THE RESULTS  
OF  
RECENT RESEARCHES  
IN THE  
TREATMENT OF PHTHISIS.

BY  
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(Founded on a Paper read at the Annual Meeting of the British Medical  
Association, at Sheffield, in August, 1876.)

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Any well digested observations on the management of a disease so widely prevalent as pulmonary consumption, merit the fullest discussion, and the closest examination. It is for this reason that I have thought it advisable to reprint in an enlarged and more fully developed form the collection of facts and reflections gathered together in my paper on this subject, which was read at the last annual meeting of the British Medical Association, and printed, in its original form, in the *British Medical Journal*.

44, HERTFORD STREET, MAY FAIR.

*April, 1877.*



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# On the Results of Recent Researches in the Treatment of Phthisis.

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## INTRODUCTORY REMARKS.

 N attempting to bring together some of the chief results which have been arrived at through the researches of recent investigators into the treatment of pulmonary consumption, I am aware that I am entering upon a very extensive and debatable subject; that it is one of the very greatest interest and importance, will be generally admitted; and that it is one which may at all times, with much propriety, occupy the attention of the medical profession, will doubtless also be readily conceded.

The treatment of those widely prevalent diseases of the lungs which we comprehend under the designation of pulmonary phthisis, must always possess a deep and painful interest for us. I suppose there is no class of diseases

for which we should so rejoice to learn that we possessed certain and reliable remedies, nor any class of diseases, when we contemplate their *post mortem* results, for which we so despair of finding any.

But we should not be discouraged by the contemplation of the final results of pathological processes as we see them in the dead-house. It is certainly not the province of pathological investigation to quell our ardour and diminish our efforts in endeavouring to check the ravages of disease. That it has some such effect on certain minds is beyond question. Let us guard our own against any such fatal bias. When we look upon a lung infiltrated from apex to base with tuberculous and inflammatory deposits in every stage of deposition and disintegration, riddled with cavities ; its air-spaces—such as remain to it—choked with purulent secretion and *debris* of tissue, we may well confess our helplessness before such a state of disease and decay.

But this is only the final expression of what was at one time probably simply a constitutional tendency ; a proneness to a certain form of disease, analogous in some respects to that

tendency to gouty changes which we know to be so common, and perhaps, when early recognised, amenable like it to remedial measures. Pathology, and especially the pathology of phthisis, teaches us this lesson : that we should seek out and strive to comprehend those constitutional tendencies in which disease originates, and which, if undetected and unchecked, proceed, often with considerable rapidity, to the establishment of fatal morbid processes ; and that we should treat these tendencies before they take the form of a definite morbid change. Pathological studies are of use also in another way in influencing the treatment of disease : by showing us what is possible, or, at any rate, what is impossible, they often point out the only useful direction which scientific therapeutic efforts can take.

The vast amount of patient labour that has of late years been expended in the investigation of the pathology of phthisis, may appear at present, and on a superficial consideration, to have contributed very little to any particular advance in the treatment of that disease ; but I shall, I hope, be able to show that such a conclusion would not be altogether just, and

that we may gather from the advanced pathology of phthisis indications of the true direction which remedial measures must take.

The subject of the treatment of pulmonary phthisis is, as I have already said, a very wide one, and, to be thoroughly comprehended, must be regarded from several points of view. My present purpose will be satisfied if I deal, as I shall be compelled to do, with a few only of the more important of these.



## PREVENTION OF DISEASE THE AIM OF MODERN INVESTIGATION.

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**T**HE tendency of modern investigation is to endeavour to discover the genesis, to seek out the origin of disease, and, if possible, to deal with it at its source. It is only thus that we can ever hope to exterminate or even diminish the prevalence of certain forms of disease. This is especially the case with phthisis. We are no longer ignorant of the conditions which give rise to this disease, and we are prepared to point out how, to a great extent, its development may be prevented. The prevention of pulmonary consumption may be considered under three heads.

(A.) The prevention of the transmission of the phthisical constitution from parent to offspring.

(B.) The prevention of the development of the disease when the predisposition exists.

(C.) The prevention of those unhealthy social

conditions which are known to favour the production of phthisis.

(A.) *The Prevention of the Transmission of the Phthisical Constitution from Parent to Offspring.*—The frequent direct transmission of tendencies to disease from parent to offspring, and the duty incumbent on society to recognise and oppose it, are, I am willing to think, much more generally admitted now than formerly; and there seems to me to be no reason why we, as the professional guardians of the public health, should hesitate to speak to the public frankly and strongly on this subject. It is our duty to point out that a diseased variety of the human species may be, and is, voluntarily bred just as any esteemed variety of animal or plant is bred. Let us speak, as with perfect truth we may, of the voluntary breeding of the insane and epileptic, the scrofulous, the cancerous, and the gouty varieties of man. By so doing we may possibly, in course of time, rouse mankind to a sense of their responsibilities in this matter, and secure in the breeding of the human race some small portion of that same care which is bestowed in the rearing of many animals. Why should a man select a

scrofulous female to be the mother of his children, when there is no lack of vigorous and healthy mates for him? or why should feeble and unhealthy males desire to hand down their feebleness and disease to succeeding generations? This question is, I know, a very delicate one, one which it is often difficult to approach, and one which at all times must be discreetly and carefully handled, and which may frequently run counter to certain sentiments for which we all entertain the profoundest respect; but we may, nevertheless, find many appropriate opportunities of showing how much pain and misery are either ignorantly or wickedly called into existence by the systematic disregard of such considerations as these. Many have to sit, as I do, week after week, and hear the same sorrowful story over and over again from young people of both sexes, just at the period when life should be opening her portals widely before them, instead of which, death has already cast over them the fringe of his dark mantle. With sad and tearful foreboding, they tell us how their "mother and father died of consumption," or their "brothers and sisters have died of consumption," or their

“mothers and aunts,” and so on. It is almost too painful sometimes to ask the question, for the certain answer brings such a terrible inference with it. But I fear we become callous to these things; for it is “the hand of little employment” that “hath the daintier sense,” else we should make more strenuous efforts than we do to bring the question home to the public, “Why does this breeding of disease go on unchecked?” If, then, we would deal with phthisis effectually, we must strike at its source: at its origin in the marriage and intermarriage of scrofulous parents. It is often from ignorance that this mischief arises, and we mainly possess the knowledge which should dispel that ignorance.\*

(B.) *The Prevention of the Development of the*

\* Shortly after writing the above, I received a note from a gentleman who had proposed to marry a young girl who was under my care at the Brompton Hospital in advanced consumption. I quote from it the following extract, as it tells a sad, but a striking, and I fear a too common story, which deserves to be thought over. He says, “the case is indeed one of the saddest perhaps ever under your notice. I have at my own cost saved this poor girl from a sad end, and her family of six others! I have during the past eighteen months buried two girls, and got two boys into an institution, and am now supporting the mother and this girl

*Disease where the Predisposition exists.*—Of the prevention of the development of the disease where the predisposition exists, I need say but little, most of the necessary precautions are obvious, and quite familiar to members of the medical profession. I will content myself with enumerating the principal measures which modern research has proved to be efficacious. The children of a phthisical mother should be wet-nursed, or brought up on cow's milk, boiled, and not much diluted. The child should be allowed much freedom of movement of its limbs and chest, and should not be bound up and enveloped, as is the custom still, to some extent, with bands and napkins and other garments. A kind of

referred to. The father has also died about three months ago. The whole family were left perfectly destitute by the father. But for me, God only knows what would have been the sad end of those who are now spared. If I married this girl it would be but to save her from want, or being cast upon the world again." I could not of course sanction such a marriage, and indeed a few weeks after this was written, the gentleman called on me to say, that having induced this girl to stand up with him in a quadrille during Christmas time, she was suddenly seized with hæmorrhage from the lungs, and expired in a few minutes.

somewhat loosely-fitting flannel dressing gown lined with cotton wool is a simple, excellent, and economical dress. Such children should be allowed an abundance of fresh air and exercise. At the period of teething, beef-tea may be added to the cow's milk, and, if dentition be delayed, some preparation of lime is useful.\* After the second or third year, cold bathing is most useful to counteract that peculiar sensitiveness to cold which is common in scrofulous children. More than ordinary care is needed in watching such children through the usual diseases of infancy and childhood, as whooping-cough, measles, scarlet fever, etc.; for we know that pulmonary consumption often has its starting-point in the chronic pneumonia which frequently remains after these diseases, or the enlarged and inflamed glands which are a common sequel, serve as foci of infection whence tubercular disease may be disseminated. It may be even necessary

\* An excellent food for such delicate children, with whom milk sometimes fails to agree, is made by mixing three parts of whey (readily made by boiling milk, adding a little lemon-juice, and straining through muslin) with one part of beef tea, thickening with a little arrowroot.



to extirpate such enlarged glands when they refuse to yield to constitutional treatment.

At the approach of puberty, we should look especially to the proper development of the thorax, we should see that the carriage of the body is such that the chest expands freely.

Mr. Liebreich has given much attention to the correction of faulty attitudes and positions arising during school-life; and although his original object was to prevent and correct defects of vision, he has carried his observations further than this, and many of his remarks apply equally well to the rectification of those faulty attitudes which interfere with the healthy action of the organs of respiration, and promote the development of phthisical disease when a tendency to it exists. Speaking of the treatment of tendencies to spinal curvature, he observes: "If a hard surface is to give the back rest, without making it suffer, it must have certain curvatures so adapted to the normal shape of the body that this latter is supported everywhere, and its weight equally distributed. These curvatures I have carefully studied, and, following their outlines, I have designed a couch adapted to the inclination of the body at an angle

of forty-five degrees. For girls who have any predisposition to lateral curvature of the spine, it will be found useful to let them do every work that will admit of it while reclining on such couch at an angle of forty-five degrees." (*School-life in its Influence on Sight*, by R. Liebreich, Ophthalmic Surgeon at St. Thomas's Hospital). I have examined this couch, which can be seen at Callaghan's, optician, Bond Street, and it seems to me well calculated not only to support the back, but also to take the weight of the arms and shoulders off the upper part of the chest; for when these are allowed to hang forward, as in the stooping attitude habitual to many young people, they compress the upper part of the chest, and prevent due expansion of the apices of the lungs. I have, later on, called attention to some remarks of Professor Rindfleisch on this head.

Gymnastic exercises\* specially designed to

\* Since the publication of these remarks in the British Medical Journal, Dr. Roth has called my attention to his system of applying the so-called "Movement cure," to the correction of faulty habits in the carriage of the body, and I am quite disposed to believe that the judicious application of his method would be found very useful in promoting



draw the shoulders backwards and dilate the upper part of the chest should be adopted, but we should be exceedingly careful that these do not overtax the imperfect breathing power. Cold ablutions should be associated with these exercises. We should be careful to maintain the nutrition of the body, and especially to ward off anæmic conditions. We should select for such persons occupations involving much out-of-door exercise, and avoid all those that are sedentary, or which lead to the breathing of impure air.

In the case of incomplete resolution of inflammations of the respiratory organs in such persons, much good has been obtained by a course of mineral waters containing soda and lime (Ems), and in bathing in such saline springs as those of Reichenhall and Soden. Such courses may be advantageously followed by a residence in an elevated region; but of this I shall have more to say when I deal with the question of climate.

(c.) *The Prevention of the Unhealthy Social Conditions which lead to the Production of* proper expansion of the chest, and due attention to a healthy performance of the necessary respiratory movements,

*Phthisis*.—The influence of foul, badly constructed, over-crowded, ill-ventilated, and ill-drained dwellings in giving rise to pulmonary and other diseases of a scrofulous type, is too generally admitted to need any enforcement here. I will only briefly call attention to the influence of certain unhealthy occupations in producing phthisis. Besides those sedentary occupations which produce faulty attitudes of the body, and so interfere with proper expansion, especially of the apices of the lungs, as in the case of tailors, shoemakers, dress-makers, seamstresses, &c., there are other occupations in the pursuit of which fine solid particles of foreign bodies are constantly being inhaled, and thus admitted into the lungs, give rise to irritation and disease of the pulmonary tissues. Dr. J. C. Hall, of Sheffield, says, “If we cannot altogether prevent these diseases of our industrious artisans, let us, at any rate, endeavour if possible to render them less deadly.

“If a man spend a considerable portion of his time, day after day, in a room the atmosphere of which is constantly loaded with small dust-like atoms of coal, cotton, flour (millers’) dust, and fine particles of foreign hair and dust, and

if the most perfect and efficient means be not taken to carry off this dust, the serious effects of the mechanical irritation soon exhibit themselves. The girls employed in hair seating, workmen in leather and flax, chaff-cutters, stone-masons, metal-miners, quarrymen, the machine-filers of Leeds, potters, needle-grinders, razor-grinders, scissor-grinders, fork-grinders, sheep-shears grinders, and, during some part of the process, table-blade grinders, all suffer more or less.

It would appear, from the observations of Dr. Holland, Medical Inspector, that metal-mining is more destructive of life than coal-mining; for metal-miners are destroyed by excessive lung-disease, shortening the average duration of their lives by neary nine years, and the period of productive labour about one third.”\*

Dr. Hall calls attention specially to the liability of the Sheffield grinders to pulmonary disease. “The causes of the disease in dry grinders is, in the first place, the irritation produced by the metallic and gritty particles inhaled in *grinding*, and in *hanging* and *racing* the stone. The bad atmosphere in which the men work must not

\* *British Medical Journal*, October 14, 1876.

be forgotten. Bad ventilation and its consequences—the breathing of hot, close, foul air, and the increased liability to catch cold after working in such an atmosphere—are frequent causes of the disease. Next come the constrained position in which these men have to work for hours; sitting upon what they are pleased to term their horsing (a low narrow bench): the elbows rest upon the knees; and, especially when grinding very small articles, the head is kept over the stone. The position is most injurious, and, when long continued, cannot but induce pulmonary congestion.

“After working some years at dry grinding, without the protection of a fan, the digestive functions become impaired; there is difficulty of breathing after the slightest exertion, and more or less inability to walk up the steps leading to the hull. The face is pale and pasty-looking; there is a feeling of constriction across the chest, and a dry sensation at the back of the throat. To these symptoms succeed coughing; at first dry, then with frothy expectoration, indicative of irritation. The physical signs of the Sheffield grinders’ disease, are in some patients those of bronchitis and dilated

bronchi ; in others of emphysema or consolidation ; and we have, lastly, excavation."

The men engaged in this unhealthy occupation rarely live beyond middle age, and many die long before reaching that period. With regard to prevention, Dr. Hall adds, "I am clearly of opinion that the means already exist. In a well-ventilated room, with a properly constructed fan—or as the men say *fannie*—I have seen (a carefully contrived box being added) all the processes of the grinding trade, *i.e.*, shaping razors, grinding forks and scissors, hanging and racing stones—in a word, all the more dangerous processes of grinding, deprived of the power of causing irritation ; all the dust having been driven up the shaft on to the outside of the building."

He also urges as an essential consideration, that boys should be prevented from entering upon this unhealthy occupation at an early age.\* Dr. Peacock has also called attention to what he calls "*French millstone makers' phthisis.*" He says, "I have recently visited one of the largest manufactories of French millstones ; and I find the injurious nature of the occupation, as before

\* *British Medical Journal*, October 14th, 1876.

reported, fully confirmed by more recent experience. I am informed that the men, who are apprenticed to the trade as boys, rarely live beyond thirty or forty, and die with pulmonary symptoms, doubtless caused by the inhalation of the sharp siliceous dust and metallic particles which they inhale when leaning over the stones during their work. This, in persons previously of sound constitution, gives rise to chronic bronchial and broncho-pneumonic affections, which lead to consolidation, and ultimately to breaking down of the lung-tissue; and, in persons predisposed to consumption, may probably call into active operation true tubercular phthisis.

“The occupation is probably more injurious to young persons who have not attained their full growth and vigour, than when the men take to it later in life.”

He adds, “It is quite possible that some effectual mechanical means may be introduced by which the inhalation of the gritty particles by the millstone makers may be lessened or prevented; and I have therefore suggested that if the stones were worked wet, it would probably very much prevent the dust being thrown off



and inhaled. I believe, however, that the most effective relief would be gained by not allowing young persons to be brought up to the trade; and by only employing men who have attained their full growth.”\*

Dr. Arlidge thus relates his experience amongst the Staffordshire potteries. “Lung-disease, caused by the inhalation of mineral dust, is exceedingly prevalent among potters, and very destructive of life, killing them off, indeed, at an early age. From statistics I have worked out, I find that, whereas among the males of the population not engaged in the making of pottery, the proportion of sufferers with bronchitis equalled 18 per cent., that of potters was a shade higher than 36 per cent.; and that, with regard to phthisis, whilst the proportion among the former was 13 per cent., it rose among the latter to 20 per cent. Now, it is the male workers who are especially exposed to the inhalation of dust from the clay in its manipulation, and we perhaps get a better apprehension of the effects of such inhalation from the statistics relatively to men and women engaged in the manufactories. For instance,

\* *British Medical Journal*, October 14th, 1876.

we find that women engaged in fictile works furnished only 7·14 per cent. of the cases under notice, as against 36·57 per cent. of male potters so employed.”

As to the disease induced amongst potters by the inhalation of dust, he says, “The special malady so induced is a chronic and incurable form of bronchitis, resembling in all its intrinsic features the bronchitis consequent on the inhalation of all mineral and of some organic dusts; resembling, that is, ‘the grinders’ rot’ of Sheffield, the miners’ consumption of coal-getting districts, the consumption of dressers of stone, or that of the mother-of-pearl workers.

“It is a form of bronchitis ever advancing from bad to worse while the workman continues at his calling. Pathologically, it is a fibrosis of the lung-tissue, consequent of the direct irritation of the gritty dust upon the mucous membrane of the smaller bronchi. Its minute features I have already described in a paper published in the *British and Foreign Medico-Chirurgical Review* for 1875, to which, in the absence of time to again depict them, I must on the present occasion refer my hearers. Its symptoms are distressing cough and severe




dyspnœa, and, as frequent concomitants, heart-disease and dropsy. The marked dyspnœa causes it to be called 'potters' asthma, whilst the wasting accompanying it has given rise to the name potters' consumption. In fact, in many cases, the line of demarcation between this chronic bronchitis and tubercular consumption is difficult of recognition, and, in a large proportion of cases, tubercular disease is associated with it."

Much in the way of prevention of lung-diseases arising from the inhalation of particles of irritating foreign matters, might be effected by the general adoption by the workmen engaged in these callings of suitably constructed respirators. Dr. Richardson has constructed one of feathers, which he believes to be the most useful material for the purpose. It is, however, with great difficulty that the workmen in many instances can be induced to take even the simplest precautions. This is especially the case when, on account of the unhealthiness of the occupation, wages are high; and men will actually resist the introduction of any safeguards which they think, by diminishing the risks, may at the same time diminish wages.

## MODERN REMEDIES FOR PHTHISIS.

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 NEXT pass to the consideration of those remedial measures which modern research has suggested as of use in phthisis. From amongst these I propose to select for our present consideration the following chiefly.

(A.) The use of the *alkaline hypophosphites*.

(B.) The use of antiseptic inhalations, and other antiseptic measures.

(C.) The treatment of phthisis by rest (local rest).

(D.) The removal to mountain climates.

(A.) *The use of the Alkaline Hypophosphites.*—Nothing could be more unfortunate than the manner in which the alkaline hypophosphites were introduced to the notice of the medical profession as remedies for pulmonary consumption. An unreasoning, untrustworthy, and injudicious advocacy, provoked a hasty, impatient, and somewhat unjust antagonism.

The absurd and extravagant claim for them that they were specific remedies for phthisis, was met by the equally unfounded statement that they were worthless and inert. I hope we are now in a position, disregarding alike their original quackish advocacy on the one hand, and their hasty rejection on the other, to form a calm and unbiased opinion as to their real merits. For my own part, knowing how difficult it is in treating cases of phthisis to judge accurately of the influence of the remedies we administer, because of the many counteracting agencies to which such patients are exposed, especially when they are out-door hospital patients, I determined, in forming my own estimate of the value of the hypophosphites, to give them perseveringly in a great number of cases, and extend their trial over a long period of time. During the last five years, at the Brompton Hospital alone, I have given the hypophosphites in one form or another to nearly a thousand patients, selected out of more than fifteen thousand cases that have been under my care in that institution.

Any one who cares to look at the records of these cases, will be forced to admit that these

remedies have had a most patient and persevering trial. From this extended experience of these remedies, I have been able to arrive at the following conclusions.

In the first place, they have *no claim whatever* to be regarded as specific remedies for tubercular disease; but they are of considerable value in a certain limited class of cases.

In advanced phthisis, with both lungs involved—a very prevalent condition amongst the out-patients at Brompton—I have never been able to discover that the hypophosphites are of any use. Nor are they of use in less advanced cases which are obviously running a rapid course, and are attended with much fever and cachexia. I have given them in such cases again and again, and I have been compelled to abandon their use, often at the solicitation of the patients themselves. In short, in those cases which we have always been accustomed to regard as hopeless and beyond the reach of all remedies, the hypophosphites are of no avail. I have noticed that they are less successful with dark persons of sanguine or bilious temperament, more than with fair persons of phlegmatic temperament. They are much more useful in young

than in older persons. I have seen the greatest benefit arise from their use, in the first place, in children in all forms of chronic lung-disease ; and, in the second place, in young adults of fair complexion, not very cachectic or emaciated, and with disease limited to the upper part of one lung. In the cases in which they do good, their beneficial effect is generally noticed almost immediately. The patients usually say that feel very much better "in themselves;" they feel stronger, in better spirits, are more active, eat better, and sleep better. The night-sweats disappear, the cough sometimes disappears also ; but it will often be observed that, while there is this general amelioration and a subjective feeling of improvement, the cough will continue unrelieved, and even occasionally become more troublesome. Notwithstanding the evident improvement in general health, the physical signs often remain the same, and I have known them actually increase in extent, while the patient has been feeling so much better that he has resumed his occupation, and declared that he felt "as well as ever he did in his life." The improvement which follows the use of the hypophosphites is frequently only of temporary duration ;

that is especially the case with hospital out-patients. It is much less so with private patients, who can be more carefully watched and more thoroughly protected from adverse circumstances.

I have seen all the symptoms of phthisis disappear during the use of the hypophosphites, and the general condition as well as the physical signs undergo rapid amelioration. The patient has been apparently quite well, but an imprudent visit to a theatre has resulted in a fresh catarrh, and the disease has again advanced with unusual rapidity; the former remedies were now quite useless, and in a few months the case ended fatally. It has, indeed, seemed to me that, in some of these cases where the hypophosphites led to temporary arrest of the disease, the subsequent advance has been unusually rapid and quickly fatal. I would therefore urge that patients who are mending under the influence of these remedies, should be protected with more than usual care against all those conditions which may possibly lead to a relapse.

A few words with regard to the kind of hypophosphite I have found most useful, and



as to the best mode of its administration. As soon as I began giving the hypophosphites, I immediately observed that the hypophosphite of soda, even in small doses of two and three grains, increased or produced, in some persons, a state of febrile excitement, and in others much intestinal irritation. After ten or twelve days of its use, I again and again noticed in certain cases an elevation of temperature, loss of appetite, a quickened pulse and a furred tongue; and with or without these pyrexial symptoms, diarrhœa was very frequently set up. For some years past I have entirely relinquished the employment of this salt, and I now use only the hypophosphite of lime. After giving it in various forms and doses, I find the following formula as, generally, the most suitable.

Calcis Hypophosphitis gr. iij.

Glycerini ℥ xx.

Tincturæ Quassiae ℥ x.

Syrupi Aurantii ℥ xxx.

Aquæ ad ʒ ss.

I give this dose three times a-day, an hour after food.

For young growing children, I find a com-

bination of the hypophosphite of lime and the syrup of the phosphate of iron acts much better than the lime salt alone. I usually give it in a syrup according to the following formula. The quantities are calculated for children from eight to ten years of age.

Calcis Hypophosphitis gr. iss.

Syrupi Ferri Phosphatis, ℥ xxx.

Syrupi Simplicis ℥ xxx.

Aquæ destillatæ ad ʒ ij.

This dose is given twice or three times a-day, soon after food.

Such are some of the results of my own observations with regard to the use of the alkaline hypophosphites in the treatment of pulmonary consumption, and I believe they are consistent with the conclusions of many other recent observers.

(B.) *The use of Antiseptic Inhalations, and other Antiseptic Agents in the Treatment of Phthisis.*—Next, let me call attention to the use of antiseptic agents in the treatment of phthisis, and especially to the use of antiseptic inhalations.

In the first place, let us inquire if the results of modern pathological investigations give us



any sound reason for the belief that antiseptic vapours can exercise a remedial influence in tubercular consumption.

Let me quote Rindfleisch's observations on "How Scrofulous Persons become Tuberculous" (Ziemssen, *Cyclopædia of Medicine*, vol. v, p. 636). "When we consider that scrofulous persons are especially predisposed to tuberculosis; that tuberculosis hardly ever occurs except in scrofulous persons; that tuberculous phthisis is only a combination of scrofulous inflammation and tubercle; and that in scrofulous persons an inflammation brings with it the risk of tuberculosis, we can hardly fail to see that, in certain men, as in certain animals, inflammation runs a peculiar course. *The cheesy infiltrations and suppurations of mucous membranes elaborate a poison which, when absorbed, produces tubercles.* This constitutes the real relationship between scrofula and tuberculosis. The tubercular poison in most cases is thus manufactured by the patient himself.

"Pulmonary phthisis is almost always a general disease. There is first scrofula, and then a cachexia, from the absorption of scrofulous products,"

Rindfleisch considers he has demonstrated that, in the early stage of pulmonary phthisis, there is a combination of two conditions, a circumscribed catarrh of the small bronchi at the apex, and an eruption of miliary tubercles in the acini belonging to these bronchi. "I have never seen," he says, "a circumscribed catarrh of the small bronchi without an initial tubercle granulum, nor an initial tubercle granulum without some bronchial catarrh. I believe, indeed, that the catarrh is the earlier, the tubercle the later, process." "I believe that, in the catarrhal secretions of a scrofulous person is contained the tubercular poison which becomes inoculated in the edges and corners of the narrowest portions of the bronchi," and then gives rise to the tubercle granulum.

I quote this opinion of Rindfleisch, because it seems to me to afford a pathological basis, and to give a pathological indication for certain therapeutic processes which have been again and again advocated, but which have never, at any time, thoroughly established themselves in medical practice.

If, as Rindfleisch asserts, the dissemination

of tubercle through the lung depends on the infective quality of the secretion of the bronchial mucous membrane when a bronchial catarrh arises in a scrofulous person, then the very obvious remedy is to convey some vapour into the lung which may have the property of disinfecting this infective secretion. It may be objected that there is no such vapour; but such an objection is entirely without foundation, because it would require for its proof that every vaporisable substance had been repeatedly tried and had invariably failed.

There is another possible mode, indicated by modern pathology, in which antiseptic remedies might act. We might be able to add to the blood some agent capable of destroying the infective property of those substances which are absorbed from the foci of scrofulous inflammations, and which we may term the *poison of tubercle*. Could we administer such an agent during or immediately before the possible dissemination of such substances, we should have a remedy for tuberculous phthisis. Such, I take it, are some of the suggestions which modern pathological researches yield towards a rational treatment of phthisis.

But sound practical medicine must rest on an experimental as well as a theoretical basis ; and we must therefore inquire what results have followed the actual use of antiseptic remedies. Now, I am by no means sure that we shall not discover that many of our remedies for phthisis act antiseptically, which are thought by many to act otherwise. May not the sulphurous mineral waters, such as those at Eaux Bonnes, act in this way ? It must, I imagine, often have struck many of us that the theory which explains the action of these waters by the assumption that they develop affections—“rheumatic, gouty, or herpetic”—which “counterbalance tuberculisation,” is almost as clumsy and unsound as the “*similia similibus curantur*” of the homœopaths. It seems much more likely that they act by conveying to the blood and the secretions substances which destroy the poisonous and infective properties of the products of scrofulous inflammation ; and that these substances, in their turn, set up other forms of irritation of a comparatively harmless kind.

Again, may not much of the beneficial influence of mountain air be due to its antiseptic

properties? I shall attempt to answer this question when I come to speak of the influence of mountain climates on pulmonary consumption. But let us consider now, more especially, the use of medicated antiseptic inhalations. Scattered observations as to their value exist in abundance; but we have not as yet, in this country at least, any trustworthy systematic account of their patient, extended, and persevering trial. Much in detail has yet to be worked out with regard to the best modes of their application, the best substances to select, and the kind of cases most suitable to their administration. I have long been considering this important practical question in pulmonary therapeutics, and I shall immediately call attention to what appears to me to be the best method of applying antiseptic inhalations.

But first let us gather together a few of these scattered observations to which I have alluded. Dr. Copland mentions the fact that "a young man, who had repeatedly come under his observation in an advanced stage of phthisis, completely recovered his health after he had been for a considerable period employed in the manufacture of *creasote*."

Lemaire's observations on the inhalation of carbolic acid may be briefly summarised as follows. It must be remembered that he gave it also internally in aqueous solution. He found, he says, very remarkable effects follow its use. There was diminution of cough after twenty-four hours, and, in some cases, almost a complete disappearance after a few days. The expectoration was diminished or almost suppressed, and, if the sputa were offensive, their fœtor disappeared. In many, the physical condition of the respiratory organs was ameliorated. Two were cured; in others, there was a subsidence or disappearance of *râles*, and parts became pervious to air which had previously been impervious. In cases in the second stage, he had noticed increase of strength, return of appetite and sleep, increased freedom of breathing, and general exhilaration. The amendment, however, did not persist in all cases.

Dr. Sansom also offers his testimony as to the "real value" of the "dry inhalation of carbolised air" in phthisis. This excellent observer has placed on record many cases in which the internal administration of the sulphocarbolates appeared to be of great service,



The inhalation of balsamic vapours—frankincense, turpentine, storax, etc.—in phthisis, is of very ancient date, and its value was, from time to time, strongly insisted upon by the older physicians. Again and again has the dilute vapour of tar been advocated as of much use in pulmonary consumption; and so cautious a writer as Dr. Copland observes, at the end of his *Historical Sketch of the Treatment of Pulmonary Consumption*: “The inhalation of the fumes of tar or of creasote, or of the terebinthines, very weakly diffused in the atmosphere breathed by the patient, is in some cases beneficial in impeding the advance of tubercles, or the formation of cavities, and in healing the surfaces of cavities which have been formed.”

I cannot myself doubt the value of antiseptic inhalations, even if they only have the effect of temporarily cleaning, as it were, the pulmonary surface. It is a process somewhat analogous to that of washing away the decomposing discharges of a foul superficial ulcer.

Sir William Gull has said that he can smell syphilis. I think I can smell phthisis. There is a peculiar nauseating odour in the breath of many phthisical patients, even before the de-

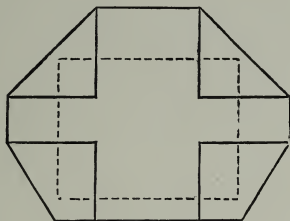


velopment of marked physical signs. Of course, if antiseptic inhalations are to be of use, they must be frequently employed, and means must be adopted which will insure the antiseptic vapour reaching the whole of the diseased portion of the pulmonary tissues. The vapour must be evenly diffused through the atmosphere the patient breathes. I will now enter into a few details as to the best manner of using these antiseptic inhalations.

A convenient mode of employing remedies in the form of inhalation is by means of the so-called respirator-inhalers. If such an instrument be constructed so as to cover the mouth and nose, the patient can continue his occupation while he is inhaling, a very obvious advantage to many.

I have myself devised two such respirator-inhalers, which I will endeavour to describe. The first of these, suitable for hospital and dispensary patients, can be readily constructed at the cost of a few pence. A piece of perforated zinc (sold at five pence the square foot), about 3 inches long, and  $2\frac{1}{2}$  broad, is bent to a convenient form for covering the mouth and nostrils, its corners being first turned inwards

so as to make a figure of the following form :—



Another smaller piece of the perforated metal, about 2 inches long and  $1\frac{1}{4}$  inch broad, is introduced under the turned-down corners of the larger piece, as in the dotted line in the figure.

There is now an available space between the inner and outer plate of perforated metal, which can be stuffed with tow, or cotton wool, or fragments of sponge, or any other absorbent material. The whole can be covered with a small piece of red flannel, and elastic or other fasteners attached. In the flannel covering a little flap is made which can be lifted, so that the fluid to be inhaled can be poured upon the tow through the perforated metal covering.

The cost of this little respirator-inhaler, apart from the trouble of making, which any one can undertake, is certainly less than three pence.

Another, which Messrs. Arnold and Son, of

Smithfield, have undertaken to construct, consists of an outer case of perforated ebonite, opening with a lid for the introduction of the inhalent, and inside which there are three or four layers of metallic wire-gauze, resting on a layer of absorbent material, sponge, tow, or lint, &c. To use this respirator-inhaler, the united layers of wire-gauze are first removed and heated by immersion in boiling water ; they are then replaced on the layer of absorbent material at the back, and the fluid for inhalation is poured over the heated wire-gauze ; the lid is then closed, and the respirator applied over the mouth and nose. The advantage of this apparatus is the means which it affords of introducing artificial heat into the instrument, so as to promote the evaporation of the inhalent.

Dr. Wm. Roberts, of Manchester, has also devised a respirator-inhaler, which he thus describes.\* It consists of a shallow tin box, of the size and shape of the ordinary respirator. The top and bottom are perforated with holes like the lid of a pepper box. The box is filled with some porous material (tow, oakum, or very open flannel), and the top lifts off with a hinge,

\* *British Medical Journal*, February 3rd, 1877.

to permit the renewal of the porous material and the addition of whatever drug the prescriber may wish the patient to inhale. Five, ten, or more drops of some volatile drug are dropped on the porous material, and the box is closed and fastened on, like a respirator, by means of elastic bands drawn round the ears. \*

Mr. Carrick, of Glasgow, has also devised a respirator-inhaler, consisting of a hollow breast-plate divided into two compartments; the larger one containing a piece of felt, the smaller one a piece of sponge to absorb the inhalent. This is connected with a piece of india-rubber tubing and a mouth-piece. The breast-plate is worn inside the coat, so that the heat of the body volatilises the inhalent, and the patient can follow his occupation whilst inhaling. The layer of felt is intended to filter the inhaled air.

I have suggested also the use of an inhalation chamber, for the continuous breathing of an atmosphere charged with antiseptic or other vapour, which I will now describe.

An air-tight chamber of any suitable material

\* These are made by John Wood, King Street, Manchester, the prices being 3s. and 5s. 6d.

and of a convenient form and size—a square or oblong box about the size of an ordinary hat-box does very well—is mounted on a stand a few inches in height. To the upper part of this chamber on one side, is a large opening about two inches in diameter, to which is attached a short, wide, flexible tube, made of varnished silk or other suitable material, and ending in a mouth-piece which can be fixed by an elastic border under the chin and over the mouth and nose. In the bottom of the chamber there are two apertures, to both of which short flexible tubes are attached. One of these communicates with the beak of an ordinary tubulated retort, in which the substance to be vaporised can be submitted to the heat of a spirit lamp. The medicated vapour is thus conveyed into the inhalation chamber, through the atmosphere of which it becomes evenly diffused. The tube at the other aperture communicates with the external air, the entrance of which into the chamber can be easily regulated. Or this tube can, in certain cases, be connected with a gas-holder containing oxygen, which can be supplied in a graduated manner to the inhalation chamber, a proceeding

which may be found of value in some cases of asthma or emphysema, or of phthisis complicated with these affections, or in any case in which the extent of respiratory surface is greatly diminished.

The next question to be considered is :—What are the most useful agents for purposes of antiseptic inhalations? Those generally employed are tar, in solution in rectified spirit or spirit of chloroform, carbolic acid, spirit of camphor, turpentine, oleum pini sylvestris, oil of sandal wood, oil of eucalyptus, compound tincture of benzoin, iodine, creasote.

Spirit of chloroform is an excellent solvent for all these substances, and mixes well with them. It is itself antiseptic, and also soothing to the bronchial mucous membrane, and it is readily vaporisable. With regard to camphor, it must be remembered that when this is introduced into any compound of inhalents, and when heat is applied, the camphor volatilises much more rapidly than the other substances, and the inhalations may be objected to on account of their pungency.

A useful inhalation is the “Vapor Chloroformi Compositus” of the Brompton Hospital



Pharmacopeia, of which the following is a slight modification.

Glycerini Acidi Carbolici ℥ iij.

Succi Conii ℥ ij.

Spiritus Chloroformi ad ℥ j.

The following is also a good formula—

Acidi Carbolici ℥ j.

Tincturæ Benzoini Compositæ ℥ ij.

Spiritus Chloroformi ad ℥ j.

And as an astringent the following—

Spiritus Terebinthinæ ℥ ij.

Tincturæ Benzoini Compositæ ℥ ij.

Spiritus Chloroformi ad ℥ j.

Or the following—

Olei Pini Sylvestris ℥ ij.

Glycerini Acidi Carbolici ℥ j.

Spiritus Chloroformi ad ℥ j.

A simple solution of tar in rectified spirit or in spirits of chloroform, I prefer in many cases to any other inhalent.

Dr. Wm. Roberts, of Manchester, a most careful and skilful observer, has reported several cases in which he has noticed benefit follow the use of these inhalants. He mentions cases of hæmoptysis in which the hæmorrhage ceased immediately on the use of inhalation of



turpentine ; cases of phthisis with disease in both lungs, and with very profuse purulent expectoration, in which the inhalation of creasote and of iodine were of great apparent benefit ; of laryngeal phthisis in which great relief followed the inhalation of equal parts of chloroform and olive oil ; and cases of bronchitis in which “ *the best results* ” followed the inhalation of oleum pini sylvestris and the compound tincture of benzoin.\* He has also found inhalations of the oil of eucalyptus of much value in relieving the cough and profuse expectoration in advanced phthisis. I am glad to be able to quote the testimony of so trustworthy a clinical observer as Dr. Roberts in corroboration of my own experience.

(c.) *The Remedial Influence of Local Rest in Phthisis.*—I have but little to say on the subject of the remedial influence of *rest*—local rest—for the portion of lung diseased in cases of phthisis. I agree with those who, like my colleague Dr. Roberts, have advocated the practice of limiting the respiratory movements in certain forms of acute-inflammation within the chest—in cases of pneumonia and pleuritis ;

\* *British Medical Journal*, February 3rd, 1877.

but I wholly doubt that enforced inactivity of the respiratory function is advantageous in phthisis generally. When complicated with an acute attack of pneumonia or pleurisy, limitation of the respiratory movements of the chest-wall may be of temporary advantage ; but I am disposed to think that those who advocate the establishment of a sort of pulmonary anæmia, as a means of checking the advance of tubercular phthisis, are resting on a false analogy and an erroneous pathology. I have heard of a “lung-splint !” and I doubt not there are instrument-makers who would construct a splint for the liver, if we would let them ; but, in either case, I think the instrument-maker alone would be benefited. So far from enforced “rest” being curative in phthisis, the very opposite plan of treatment has been proved to be very beneficial. By the action of mountain air, a sort of lung “gymnastic” is excited, and there is greatly increased activity of the respiratory functions ; while, in climates where such a mode of life is possible, we hear of living in the open air as the best cure as well as preventive of phthisis.

Let me again quote that eminent pathologist, Rindfleisch (Ziemssen, vol. v). He is explain-

ing why it is that the tubercular process usually begins in the apices of the lungs. "We can offer some explanation of this fact, if we can show that the catarrhal secretions of scrofulous persons are less easily removed from the bronchi of the apices; for, if the secretion does thus remain in these bronchi, it will have time to inoculate the surrounding tissues. Two factors have the principal share in influencing the elimination of the bronchial secretions—the respiratory movements of the lungs, and the tenacity of the secretion itself. *The more freely the respiratory movements are made, and the more a sufficient hyperæmia is present to mix the thick cellular secretion with serum, so much the less likely will the secretion be to remain in such a part of the lung.*" "In the ordinary upright position of the body, the weight of the dependent arms is exerted on the upper part of the chest, and must restrict the respiratory movements there. This fact corresponds with the almost exclusive occurrence of phthisis in the human race." "In these same persons, it is probable that the secretions at the apices of the lungs are inspissated. According to Virchow, the thickness of a catarrhal secre-

tion, especially in the bronchi, is in inverse relation to the amount of blood in the part. It has already been shown that poverty of blood is one of the most important factors of scrofula. By poverty of blood, we mean that there is not a sufficient amount of blood properly to fill the vessels. If the amount of blood in the lungs is insufficient, in the vessels with rigid walls the blood will gravitate to the lower part of the vessels alone ; if the walls are elastic, the blood will be found principally in the lower vessels. From this it follows that, in such lungs, most of the blood will be in the lower lobes and least in the apices."

Healing processes in the lungs will, I believe, be best promoted by such measures as favour rather than retard the circulation through the lungs, and which promote healthy oxidation, while they provide as much as possible for the discharge or disinfection of the infected secretions formed therein. With these few remarks, I leave this part of my subject, and pass on to consider very briefly the influence of mountain climates in the treatment of phthisis.

(D.) *The Influence of Mountain Climates in the Treatment of Phthisis.*—There can no longer,

I conceive, be any doubt of the fact that certain cases of consumption, arising in the plains, become arrested on migrating to the mountains. I need not go over again the evidence which numerous trustworthy observers have brought before the profession as to this fact. I have myself had somewhat unusual opportunities of judging of the influence of mountain climates, especially in the Engadine. There are, however, two interesting questions in connection with this subject which we may briefly consider now. The first is: What is the type of case which is best suited for the trial of the mountain-air cure? The second is: What is the special mode of action of mountain climates in these cases? The cases that are benefited by removal to elevated districts are, as we might have predicted, precisely those which are most amenable to other plans of treatment. Cases of very advanced disease, of profound cachexia, cases with active febrile symptoms, are unsuited for such migration. All who have seen much of phthisis know well enough that a great number of cases never do so well as in the quiet and comfort of home. But a restlessness seizes on many consumptive

patients, even in advanced stages of the disease, and they *will not* remain at home. For such cases, a southern watering-place is better suited than a mountain valley. The rarefied air of elevated regions is quite unsuited to cases in which large tracts of lung-tissue are disorganised or hopelessly disabled. With only a small amount of available breathing-space, and only very thin air to breathe, the difficulty of breathing becomes intense, and there is always danger that such patients may die practically suffocated. I have myself seen one such death. But in cases where the disease is limited to one apex, or where the disease is chiefly catarrhal, and where there is no very intense cachexia or acute febrile symptoms, and the patient's muscular strength is good; or where the disease, though more advanced, is stationary and the general debility is not great; in such cases, removal to a mountain climate is likely to be of much service. \*

\* I have lately received a letter from a patient who is now (November) at Davos, in the Grisons, intending to pass the winter there. He writes: "I have been feeling improvement, and especially have felt better since the cold began



The next question is, How does mountain-air act in these cases? It must, in the first place, be borne in mind that in these sparsely inhabited districts we find precisely the opposite social conditions to those under which pulmonary consumption becomes developed. The air is, as I have already said, antiseptic ; it is clear, bright, and pure ; and there is an *almost entire*

a week or two ago. I feel my nerves (or what I imagine to be so) quieted and strengthened. I find the cold much less trying than in the Engadine. I have not had any swelling of the feet or ankles since coming here, and I eat and sleep very well, and can take more exercise than before." I mention this case, because it is the second I have had under my own care in which phthisical disease had already reached an advanced stage before trial was made of change to a high mountain valley. In this patient, the whole of the upper lobe of one lung is the seat of infiltration, with excavation at the apex. In this, as in the other case I allude to, the first noticeable change in the physical signs was a rapid disappearance of the moist *râles*, the area of dulness remaining unchanged. Some cold and windy weather in the Engadine in August, soon after his arrival, tried him greatly, and his circulation became seriously embarrassed, as was evidenced by lividity of the surface and swelling of the feet and ankles. These symptoms, serious as they were, and showing how much lung-tissue was disabled, have now long since disappeared.



*absence of those organic particles which play such an important part in promoting putrefaction.* The stimulating and tonic properties of the air rouse the patient to increased muscular activity and promote general nutritive changes. The temperature of the air, though lower, is more equable in the mountains than in the plains. The annual and daily oscillations of temperature are less. The rarefaction of the air necessitates greater activity of the respiratory organs; the air-cells dilate more thoroughly, and the walls of the chest become expanded; the inspirations are more profound, to compensate for the thinness of the inspired air. It follows that there is less stagnation of air in the lungs, and diffusion of the gases set free at the pulmonary surface is favoured.

These are probably but a few of the conditions which contribute to the efficacy of mountain climates, and many other interesting explanations have been offered as to the action of mountain-air, which, however, I need not enter upon here.

In the foregoing pages I have called attention to the chief facts which modern researches into the treatment of pulmonary consumption have

established. This important subject merits, and will, I am convinced, repay further persevering investigations, and I hope I have advanced observations of sufficient interest to induce others to take up some of the points to which I have alluded, and to work them out to a thorough issue ; for I believe, in medicine as in morals, there is no better rule than the scriptural one : “ Prove all things ; hold fast that which is good.”

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